

**White House Conference on Aging
Testimony
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American Federation for Aging Research**

Longevity and its effects on the burden of disease

By 2030 the number of people aged 65 and older is likely to double. This increase is due to both population increase and to increased longevity. Life expectancy at birth in the US in 1900 was 49.2 years. By 2000 this had grown to 76.9 years. Currently, life expectancy at birth in the US is increasing by roughly .2 of a year each year. As a result, life expectancy by 2030 (25 years from now) could easily reach 82 or more years (more for women and a bit less for men) not 100 or 150 years as some in the media would have us believe. An obvious concern of importance to us all is how this increase in older Americans will play out in terms of opportunity and burden. What will the balance be? Can anything we do now have significant impact on what happens over the next 2 or 3 decades? The answers to these questions are of enormous consequence to us all, and what most Americans believe is based on a very distorted presentation of the issues by elements of our culture with divergent agendas.

Political interests have a stake in presenting the data in ways that can be used to generate support for action. Thus, we hear that Social Security “is broke”, or will be broke by 2010, or is safe until 2050, or can be saved if we make one or another change. My point here is not to argue which of these views is right or wrong, but to point out that it is little wonder that the average American is bewildered and to argue that it makes sense to obtain the best possible data to inform policy makers so that decision making can be based on fact not political expediency.

On the other hand, the anti-aging/nutriceutical industry has a stake in presenting a dreadful image of “normal aging” in conjunction with touting the wonders of current and developing therapies. This set of interests is divided into two major camps. One camp (including many of my scientific colleagues) predicts that research will produce very significant increases in longevity with concomitant increases in ‘health span,’ if we will just provide the needed funds. The other camp proclaims that great increases in individual longevity are already possible if individuals will just buy the appropriate drugs, nutritional supplements, hormone therapies, spa treatments or all of these together. The costs of these claims are two-fold. They encourage the belief that health can come out of a bottle rather than as a result of genes interacting with healthy lifestyles, and they often cost enormous amounts in cold hard cash. Even if they worked they would only be available to the very rich.

Real research with animal model systems, where increases in longevity have actually been achieved, so far show that increased longevity does not increase disability. The age dependant diseases to which these animals (rodents, flies, worms and maybe monkeys)

are susceptible, occur later in life and the period of compromised health is about the same. Two decades ago there was a spirited debate about whether increased lifespan in humans would or would not lead to great increases in disability. So far, we have not seen an increase of this kind. We do see more cancer and dementia now than in the early decades of the last century as many more people live long enough to succumb to late life disease. There is no reason to expect however, that there are diseases waiting to be manifest in centenarians that we know nothing about now. So, I think the question, in the long run, is not whether greater longevity will result in a greater health burden, but rather, what sorts of improvements can we realistically expect research to provide to an aging population thus reducing the burden of disease. These changes could easily compensate for the expected increases in the numbers of aged individuals in the population.

The success of research on the horizon

We are in the midst of the most exciting and important scientific era in the history of the world. I finished graduate school 40 years ago, and virtually everything I do scientifically today is the result of discoveries made since then. Many of the important discoveries for aging are the product of research undertaken in the last decade. The pace of discovery is increasing at dizzying speed. While this is sometimes disconcerting, the opportunities for improving the human condition are mind boggling without having to imagine 150 year old or 500 year old humans.

The completion of the human genome project has given us the tools to truly understand how our genes interact with our environment (including lifestyle) to affect how long and how well we live. While I don't think we are going to see 150 year old humans any time soon, I do believe that we will find new, effective therapies for age related diseases. Drugs will be designed to match our genetic makeup so that they are both more effective and less likely to have adverse side effects. For some diseases we will be able to provide replacement genes or gene products to compensate for our defective genes.

The very basic research that underlies these possibilities is providing understanding of the myriad ways our bodily systems interact. For example, research on how telomeres (DNA at the ends of chromosomes), might determine the lifespan of cells, connects with research on the involvement of telomeres in cancer and may explain the strong link between aging and cancer.

One outcome of increases in our knowledge will be better health span. Another will surely be increases in hype, charlatanism, media confusion, and policy controversy. We can view our aging population as a collection of greedy geezers, as a resource of wisdom, or something in between. It is in the best interests of all Americans that we begin now to discuss what is realistically possible and how we will deal with the inevitable effects on our society. What we do now surely will have an impact on what happens and how it impacts our lives. The changes are coming. We can either meet them prepared or let them overwhelm us. The White House Conference on Aging is an ideal forum to inform Americans of the opportunities and the challenges resulting from the science of aging and to involve them in the choices that will need to be made individually and collectively.